FILE 'HOME' ENTERED AT 09:45:59 ON 01 JUL 2002

=> file fsta frosti
COST IN U.S. DOLLARS

	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	0.21	0.21

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FILE 'FROSTI' ENTERED AT 09:46:05 ON 01 JUL 2002
COPYRIGHT (C) 2002 Leatherhead Food Research Association

=> s arginine or lysine or histidine or tryptophan or ornithine
L1 13561 ARGININE OR LYSINE OR HISTIDINE OR TRYPTOPHAN OR ORNITHINE

=> s acesulfame or aspartame or alitame or cylcamate or glycyrrhixin or neotame or saccharin
L2 4430 ACESULFAME OR ASPARTAME OR ALITAME OR CYLCAMATE OR GLYCYRRHIXIN OR NEOTAME OR SACCHARIN

=> s l1 and l2
L3 64 L1 AND L2

=> s sweetener#
L4 13836 SWEETENER#

=> s l3 and l4
L5 49 L3 AND L4

=> s salt#
L6 37824 SALT#

=> s l5 and l6
L7 4 L5 AND L6

=> d 1-4 all

L7 ANSWER 1 OF 4 FSTA COPYRIGHT 2002 IFIS
AN 1991(01):T0006 FSTA
TI Molecular design of inverted-**aspartame**-type **sweeteners**
.
AU Nosho, Y.; Seki, T.; Kondo, M.; Ohfuji, T.; Tamura, M.; Okai, H.
CS Correspondence (Reprint) address, H. Okai, Dep. of Fermentation Tech., Fac. of Eng., Hiroshima Univ., Higashihiroshima, Hiroshima 724, Japan
SO Journal of Agricultural and Food Chemistry, (1990), 38 (6) 1368-1373, 18 ref.
ISSN: 0021-8561
DT Journal
LA English
AB During a study of **salty** peptides, some basic dipeptides, e.g. Gly-Lys, had no **salty** taste but a sweet taste of the same potency as sucrose. The sweetness of such peptides was related to the theory of the trifunctional unit AH-B-X (acidic proton, electronegative centre, hydrophobic group, resp.), and the compound benzoyl-Gly-Lys was synthesized. As, in accordance with the theory, this compound had a higher sweetness potency than Gly-Lys, a series of peptides was synthesized to obtain more effective **sweeteners**. Because of the relative orientation of the AH-B-X groups about the peptide bond [X is on the N-terminal, and the AH-B system on the C-terminal] these peptides are termed inverted-**aspartame**-type **sweeteners** [in **aspartame**, X is on the C-terminal]. Physicochemical and sweetness

properties of 25 compounds are reported. In the series of peptide **sweeteners** investigated, **lysine** gave the optimum distance between AH and B. The phenyl group was adequate for the hydrophobic group X. The optimum total C number between AH-B and X was 6 or 7. The compound Ph-Ac-Gly-Lys has a sweetness potency 50x that of sucrose. None of the compounds studied had the methyl ester function that is essential in **aspartame** (in the inverted-type **sweeteners**, the B group is the C-terminal carboxylate group). This lack of ester function is considered an advantage with respect to stability in solution and avoidance of methanol production. It is also expected that the inverted-**aspartame**-type **sweeteners** can be synthesized more cheaply than **aspartame**.

CC T (Additives, Spices and Condiments)

CT ADDITIVES; FLAVOUR; **SWEETENERS**; SWEETNESS

L7 ANSWER 2 OF 4 FSTA COPYRIGHT 2002 IFIS

AN 1985(07):T0001 FSTA

TI **Sweetener** composition and sweetening method.

IN Nakajima, N.

PA Takeda Chemical Industries Ltd.

SO European Patent Application, (1984)

PI EP 122400 A1

DT Patent

LA English

AB A **sweetener** composition was prepared by admixing **acesulfame** K with P1 members from the group: alanine, glycine, **histidine**, **arginine**, glutamate, glutamic acid and its sodium **salt**, sodium 5-inosinate, sodium 5-guanylate, tartaric acid and its **salts**, and disodium phosphate. Thus, the bitter taste resulting when **acesulfame** K is used alone is considerably mitigated to impart improved quality sweetness. The composition is useful for sweetening foods or pharmaceutical products.

CC T (Additives, Spices and Condiments)

CT PATENTS; **SWEETENERS**; COMPOSITION; PATENT

L7 ANSWER 3 OF 4 FSTA COPYRIGHT 2002 IFIS

AN 1977(09):T0533 FSTA

TI **Sweeteners** and enhancers.

AU Pintauro, N. D.

CS Park Ridge, New Jersey, USA; Noyes Data Corporation

SO Food Technology Review, Noyes Data Corporation, (1977), No. 40, xi + 392pp. ISBN 0-8155-0652-X

DT Book

LA English

AB This book is based on US patents that deal with **sweeteners** and sweetness enhancers and their commercial technology. 11 British patents have been included to complete the technological picture. The information is arranged under the following headings: Miraculin, glycyrrhizin and artichoke **sweeteners** (pp. 3-34); Dipeptides (pp. 35-60) including aspartic acid alkyl esters, .alpha.-L-aspartyl derivatives; Chalcones and maltols (pp. 61-90) including flavanone glycoside dihydrochalcones, hesperetin dihydrochalcone; Other synthetic **sweeteners** (pp. 91-142) including diacetone glucose, **saccharin** amine **salts**, **tryptophan** derivatives, substituted tetrazoles, 8,9-epoxyperillartine **sweeteners**, 5-imino-4, 4-dimethyl-2-imidazolidinone, kynurenine derivatives, heliotropyl nitrile, 2-(3-bromopropoxyl)-5-nitroaniline, 3-amino-4-n-propoxybenzyl alcohol, PMCA, special oximes, stevioside, maltitol and lactitol **sweeteners**; **Saccharin** combinations and special formulations (pp. 143-178); Methods for increasing bulk of mixes (pp. 179-241); Sugar substitutes and speciality ingredients (pp. 242-287); Drinks, jellies, fruits and chewing gum (pp.

288-349); and Desserts and baked goods (pp. 350-385). Company, inventor and US patent number indexes are included.
CC T (Additives, Spices and Condiments)
CT BEVERAGES; BOOKS; PATENTS; **SWEETENERS**; BOOK; FOODS; PATENT; UNITED STATES OF AMERICA; USA

L7 ANSWER 4 OF 4 FROSTI COPYRIGHT 2002 LFRA
AN 119084 FROSTI
TI Role of epigenetic factors in dietary carcinogenesis.
AU Berry D.L.; Helmes C.T.
SO Nutritional and toxicological aspects of food safety, edited by Friedman M. New York: Plinum Press, 91-113 (95 ref. En)., 1984
DT Book Article
CT BETEL; BHT; CANCER; CARCINOGENICITY; CARRAGEENAN; CYCLAMATES; DIET; DISEASE CONTROL; DISEASES; FATS; INHIBITION; PREVENTION; **SACCHARIN**; **SALTS**; SODIUM CYCLAMATE; **SWEETENERS**; TOXICITY; **TRYPTOPHAN**; VITAMINS
DED 28 Jan 1985

=> d his

(FILE 'HOME' ENTERED AT 09:45:59 ON 01 JUL 2002)

FILE 'FSTA, FROSTI' ENTERED AT 09:46:05 ON 01 JUL 2002
L1 13561 S ARGININE OR LYSINE OR HISTIDINE OR TRYPTOPHAN OR ORNITHINE
L2 4430 S ACESULFAME OR ASPARTAME OR ALITAME OR CYLCAMATE OR GLYCYRRHIX
L3 64 S L1 AND L2
L4 13836 S SWEETENER#
L5 49 S L3 AND L4
L6 37824 S SALT#
L7 4 S L5 AND L6

=> d l3 1-64 all

L3 ANSWER 1 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 2001(10):A1765 FSTA
TI Racemization of amino acids during classical and microwave oven hydrolysis - application to **aspartame** and a Maillard reaction system.
AU Stenberg, M.; Marko-Varga, G.; Oste, R.
CS Dep. of Applied Nutr. & Food Chem., Lund Univ., PO Box 124, SE-221 00 Lund, Sweden. Fax +46-46-222-4532. E-mail marianne.stenberg(a)inl.lth.se
SO Food Chemistry, (2001), 74 (2) 217-224, 22 ref.
ISSN: 0308-8146
DT Journal
LA English
AB It is often difficult to distinguish between naturally occurring D-amino acids in foods and those arising through racemization, during the acid hydrolysis procedure commonly used for their analysis. In this study, effects of conventional acid hydrolysis and microwave oven treatment were investigated on racemization of **aspartame** (L-asp-L-phe methyl ester). Conventional hydrolysis at 110.degree.C was carried out on **aspartame** for 3, 7 or 24 h in 3 or 6M HCl; lowest degree of racemization (0.3% D-asp and D-phe) occurred after heating with 3M HCl for 3h (hydrolysis rate 98%). Microwave hydrolysis was carried out in 3 or 6M HCl at different time/temp. combinations; lowest racemization occurred after 120 s at 150.degree.C in 6M HCl (0.29% D-asp, 0.16% D-phe) and the hydrolysis rate under these conditions was 88%. Both **aspartame** in diet cola and **lysine** in a Maillard model mixture showed limited racemization after conventional and microwave hydrolysis. It is concluded that the small amounts of racemization which occur during conventional or microwave hydrolysis would not obscure the presence of

significant amounts of naturally occurring D-amino acids.
CC A (Food Sciences)
CT AMINO ACIDS; **ASPARTAME**; ISOMERIZATION; MICROWAVES; D-AMINO ACIDS; HYDROLYSIS

L3 ANSWER 2 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 2000(11):T0988 FSTA
TI Potency of sweetness of **aspartame**, D-**tryptophan** and thaumatin evaluated by single value and time-intensity measurements.
AU Calvino, A.; Garrido, D.; Garcia, M.
CS Catedra de Fisiologia, Fac. de Farmacia y Bioquimica, UBA, Junin 956, 7mo P, 1113 Buenos Aires, Argentina. E-mail acalvino(a)ffyb.uba.ar
SO Journal of Sensory Studies, (2000), 15 (1) 47-64, 31 ref.
ISSN: 0887-8250
DT Journal
LA English
AB Perceived sweetness of sucrose, **aspartame**, D-Trp and thaumatin in a sour, citric acid background was determined. 30 panellists assessed the sweeteners in formulations resembling non-carbonated soft drinks, ranking potency of these compounds relative to sucrose-water combinations. Potencies of sweeteners were determined from both max. intensity (using single value and time-intensity (T-I) measurements) and average intensity (calculated as the ratio of area under the T-I curve and total perceived time). Stevens' law was applied to sweet responses, either in static or dynamic conditions. It was found that the exponent of the concn.-response function reflected the relative capacity of a compound to sweeten a given food and stressed differences of potency among sweeteners. **Aspartame**, D-Trp and thaumatin exhibited a decrease in sweetness potency relative to sucrose as sweetness increased from 10 to 100% of the full scale of response. Across the entire sweetness range, thaumatin showed the greatest potency; its long persistence time differentiated this intense sweetener from the other sweeteners evaluated.
CC T (Additives, Spices and Condiments)
CT **ASPARTAME**; FLAVOUR; SWEETENERS; **TRYPTOPHAN**; SWEETNESS; THAUMATIN

L3 ANSWER 3 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1998(03):T0133 FSTA
TI [Sensory integration of sweeteners in solutions of citric acid.]
AU Calvino, A .M.; Iglesias, M. P.; Espinosa, P. M.; Garrido, D.
CS CONICET, Univ. de Buenos Aires y Prosivad, CP 1113, Buenos Aires, Argentina
SO Alimentaria, (1997), No. 283, 61-68, 14 ref.
ISSN: 0300-5755
DT Journal
LA Spanish
SL English
AB Effects of mixing citric acid in solution with sucrose, **aspartame** and D-**tryptophan** on sweetness intensity of the 3 mixtures were investigated. Total perceived intensity (PI), sweetness and sourness at 4 sweetener concn. were measured on a 21 point sensory scale by 2 independent panels. Results were subjected to analysis of variance. Total perceived intensity was shown to be subject to a perceptual dominant component model, whereby at low sweetness intensity, PI was dependent on the proportion of acid in the mixture but when sweetness rating was high, this became the dominant factor in PI. Mutual effects of acid and sweetener were noted, but these were not the same for each sweetener. Sucrose and **aspartame** showed higher sweetening power in the binary mixtures than D-**tryptophan**. These mutual effects should be taken into account when formulating mixtures of sweeteners.
CC T (Additives, Spices and Condiments)
CT CITRIC ACID; FLAVOUR; SWEETENERS; SWEETNESS

L3 ANSWER 4 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1994(09):B0153 FSTA
TI Protease-catalyzed synthesis of oligopeptides in heterogenous substrate mixtures.
AU Lopez-Fandino, R.; Gill, I.; Vulfson, E. N.
CS Correspondence (Reprint) address, E. N. Vulfson, Dep. of Biotech. & Enzymology, AFRC Inst. of Food Res., Earley Gate, Reading RG6 2EF, UK
SO Biotechnology and Bioengineering, (1994), 43 (11) 1024-1030, 26 ref.
ISSN: 0006-3592
DT Journal
LA English
AB An investigation into the preparative scope of enzymic oligopeptide synthesis in heterogeneous eutectic substrates was carried out. .alpha.-Chymotrypsin (EC 3.4.21.1), subtilisin Carlsberg (EC 3.4.21.14), proteinase K (EC 3.4.21.14), pronase E (EC not defined), thermolysin (EC 3.4.24.2), and papain (EC 3.4.22.2) were used, after immobilization on Celite, to synthesize a variety of bioactive oligopeptides including **aspartame**, sweet **lysine** peptide, kyotorphin amide, ACE inhibiting and immunoactive tripeptides and Leu-enkephalin amide. Overall yields of 21-84% and productivities of 0.13-0.75 g/g were achieved. It is suggested that enzymic activity in these heterogeneous mixtures may be a general phenomenon, and could extend to biotransformations by other enzyme classes.
CC 5 (Biotechnology)
CT **ASPARTAME**; BIOTECHNOLOGY; ENZYMES; FERMENTATION PRODUCTS; PEPTIDES; PROTEINASES; PROTEINS; SWEETENERS

L3 ANSWER 5 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1994(07):T0004 FSTA
TI Mutagenic activity of peptides and the artificial sweetener **aspartame** after nitrosation.
AU Shephard, S. E.; Wakabayashi, K.; Nagao, M.
CS Carcinogenesis Div., Nat. Cancer Cent. Res. Inst., 5-1-1 Tsukiji, Chuo-ku, Tokyo 104, Japan
SO Food and Chemical Toxicology, (1993), 31 (5) 323-329, 18 ref.
ISSN: 0278-6915
DT Journal
LA English
AB Naturally occurring dipeptides, cholecystokinine (CKK, a tetrapeptide hormone) and the artificial sweetener **aspartame** were nitrosated for 10-30 min with 40mM-nitrite (pH 3.5, 37.degree.C), and the resultant products examined for mutagenicity in Salmonella typhimurium TA100. Specific mutagenicities (net revertants per .mu.mol precursor) spanned 4 orders of magnitude, with CCK being the most potent precursor (4700 revertants/.mu.mol) followed by tryptophyl-**tryptophan** (Trp-Trp; 1000 revertants/.mu.mol). **Aspartame** and glycyl-Trp (Gly-Trp) had intermediate activity (300 revertants/.mu.mol), while Gly-Gly and methionyl-methionine were only weakly mutagenic (20 and 12 revertants/.mu.mol, respectively). The dipeptides of aspartic acid, phenylalanine and tyrosine had no detectable mutagenicity (limits of detection 0.5, 40 and 5 revertants/.mu.mol, respectively). Kinetic studies with **aspartame** and Gly-Trp suggested that the mutagenic products arose primarily from nitrosation of the primary amine rather than the amide or indole group. The mutagenicities of nitrosated **aspartame** and Gly-Trp were higher in TA100 than in TA98, and higher without than with enzymic activation (S-9 mix) in both strains. The time-course study of Trp-Trp nitrosation showed the production of .gtoreq.2 mutagens: a potent but unstable mutagenicity was seen at very short nitrosation times and a more stable but weaker effect was obtained after >60 min of nitrosation. Not only the absolute specific mutagenicity but also the nitrite dependence of the nitrosation reaction and the stability of the

nitroso product must be taken into account in determining the risk posed by endogenous nitrosation of foods in the human stomach. Under stomach conditions, nitrosation of the side-chains of certain Trp peptides would be expected to contribute more to the endogenous burden of nitrosated products than nitrosation of **aspartame** or Gly peptides.
CC T (Additives, Spices and Condiments)
CT **ASPARTAME**; FOOD SAFETY; MUTAGENICITY; NITROSATION; PEPTIDES; PROTEINS; SWEETENERS

L3 ANSWER 6 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1993(11):B0129 FSTA
TI High level expression in Saccharomyces cerevisiae of an artificial gene encoding a repeated tripeptide aspartyl-phenylalanyl-**lysine**.
AU Soon-Yong Choi; Se Yong Lee; Bock, R. M.
CS Dep. of Agric. Chem., Korea Univ., Sungbuk-Ku, Seoul 136-071, Korea Republic
SO Journal of Biotechnology, (1993), 30 (2) 211-223, 22 ref.
ISSN: 0168-1656
DT Journal
LA English
AB A chemically synthesized gene, which encodes a 64 or 128 times-repeated tripeptide, aspartyl-phenylalanyl-**lysine**, was cloned onto the yeast expression vector pAM82 containing the PHO5 promoter. The artificial gene (LAP gene) contains the untranslated leader sequence of the Escherichia coli lipoprotein gene (lpp) with its transcription terminator sequence. When Saccharomyces cerevisiae AH22 cells transformed by recombinant plasmid containing the repeated tripeptide gene were derepressed in low phosphate medium, the artificial polypeptides were synthesized in amounts of approx. 30% of total cell protein. SDS-PAGE and immunoblot analysis indicated that the artificial polypeptides synthesized in yeast have mol. wt. of about 30 000 and 60 000 and have immunoreactivity with the artificial polypeptides expressed in E. coli. The artificial polypeptides in whole cell extracts were insoluble and seem to be synthesized as insoluble aggregates. EM showed the presence of inclusion bodies in cells. These polypeptides can be hydrolysed to tripeptides with trypsin or chymotrypsin. These properties along with the high expression and easy separation may make these artificial polypeptides a potential raw material for the production of an artificial sweetener, **aspartame**.
CC B (Biotechnology)
CT **ASPARTAME**; BIOTECHNOLOGY; BIOTECHNOLOGY PRODUCTS; GENE EXPRESSION; GENETICS; PEPTIDES; PROTEINS; SACCHAROMYCES; SWEETENERS; YEASTS; GENES; POLYPEPTIDES

L3 ANSWER 7 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1993(08):B0028 FSTA
TI Immobilization of aminoacylase by encapsulation in poly-L-**lysine** -stabilized calcium alginate beads.
AU Lee, K. H.; Lee, P. M.; Siaw, Y. S.
CS Correspondence (Reprint) address, P. M. Lee, Dep. of Chem., Indiana Univ., Shah Alam Campus in Malaysia, ITM/MUCIA, Section 17, 40000 Shah Alam, Selangor, Malaysia
SO Journal of Chemical Technology and Biotechnology, (1993), 57 (1) 27-32, 11 ref.
DT Journal
LA English
AB Aminoacylase I (EC 3.5.1.14) (from Aspergillus sp.) encapsulated in calcium alginate beads stabilized with poly-L-**lysine** was used for the production of L-phenylalanine [a precursor of **aspartame**] by the hydrolysis of a racemic mixture of N-acetyl-DL-phenylalanine. The immobilized aminoacylase was studied with respect to operational stability, thermal stability, effects of pH and temp. and kinetic

constants. Leakage of enzyme from the stabilized beads was eliminated. The immobilized enzyme retained high biological activity. K.sub.m and V.sub.m.sub.a.sub.x values for stabilized beads were 11.11 mmol dm.sup.-.sup.3 and 0.076 .mu.mol min.sup.-.sup.1, respectively. Optimum pH and temp. for hydrolysis were 6.5 and 55.degree.C, respectively. SEM revealed crosslinked structures on the surface of beads. Operational performances of the beads in a batch reaction and a packed-bed bioreactor for continuous reaction were investigated. With batch reaction, only about 5% of enzyme activity was lost within 10 reaction cycles and there was no significant loss of activity over 600 h of continuous operation after equilibrium was reached, and a conversion yield of about 80% was obtained.
CC B (Biotechnology)
CT ACIDS; AMINO ACIDS; ASPERGILLUS; ENZYMES; FUNGI; HYDROLASES; IMMOBILIZED ENZYMES; ORGANIC NITROGEN COMPOUNDS; AMINOACYLASES; L-PHENYLALANINE; PHENYLALANINE

L3 ANSWER 8 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1993(07):T0040 FSTA
TI Natural and synthetic sweet substances.
AU Krutosikova, A.; Uher, M.
CS Chichester PO19 1EB, UK; Ellis Horwood Ltd. Price .pnd.45.00 & Klemensova 19, Bratislava, Slovakia; Veda
SO (1992), xii + 223pp. ISBN 0-13-612805-X (Ellis Horwood), ISBN 80-224-0244-3 (Veda), many ref.
DT Book
LA English
AB This publication is concerned with the properties of natural and synthetic sweet substances. The book is intended for the general science reader, specialists in food technology, dieticians, research scientists and food analysts, and teachers. Chapters include the following: Structure-sweetness relationship (physiology of taste perception, relationship between chemical structure and sweetness); Naturally occurring sweet substances (saccharides, other natural sweet substances, sweet taste modifiers); Synthetic sweeteners (**saccharin**, derivatives of amino-N-sulphamic acid - cyclamates (sulphamates), oxathiazinone dioxides, **aspartame** and its analogues, derivatives of urea, **tryptophan** derivatives, derivatives of benzene, other synthetic sweet substances); and Multiple sweeteners (mixtures of natural sweet substances, synthetic multiple sweeteners). A 5-pp. subject index is included. This book was originally published by Veda in Slovak - see FSTA (1986) 18 4T27.
CC T (Additives, Spices and Condiments)
CT ADDITIVES; BOOKS; SWEETENERS

L3 ANSWER 9 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1993(07):A0047 FSTA
TI Relationships between bitter taste sensitivity and consumption of bitter substances.
AU Tanimura, S.
CS Kirin Brewery Co. Ltd., Sensory Evaluation Group, 6-26-1 Jingumae, Shibuya-ku, Tokyo 150, Japan
SO Journal of Sensory Studies, (1993), 8 (1) 31-41, 21 ref.
ISSN: 0887-8250
DT Journal
LA English
AB Effect of consumption of bitter taste substances (caffeine and beer) on bitter taste sensitivity was examined in 19 healthy adults. For individual taste sensitivity, detection thresholds were tested for 6 bitter substances (caffeine, iso-.alpha.-acids (beer bittering agents), quinine sulphate, L-**tryptophan**, L-phenylalanine and glycyl-L-phenylalanyl-L-phenylalanine) and 3 non-bitter substances (L-aspartic acid, **aspartame** and NaCl). Nonusers of caffeine had

significantly higher sensitivity (lower threshold) to caffeine compared to moderate and heavy users. Consumers of small amounts of beer had significantly higher sensitivity to iso-.alpha.-acids than people who consumed large quantities. Correlations between thresholds of 6 bitter substances were calculated. Significant correlations ($P < 0.01$) were noted in 2 cases between caffeine and quinine, and iso-.alpha.-acids and L-**tryptophan**. Data suggest a significant relation between individual bitter taste sensitivity and consumption of caffeine and beer (iso-.alpha.-acids). [From En summ.]

CC A (Food Sciences)

CT BITTER COMPOUNDS; CAFFEINE; CONSUMER RESPONSE; ECONOMICS; ORGANIC NITROGEN COMPOUNDS

L3 ANSWER 10 OF 64 FSTA COPYRIGHT 2002 IFIS

AN 1992(10):C0005 FSTA

TI Stability of lysozyme in various food products and preservative effect in meat.

AU Proctor, V. A.

CS Kansas State Univ., Manhattan, KS 66506, USA

SO Dissertation Abstracts International, B, (1992), 52 (9) 4538: Order no. DA9208095, 200pp.
ISSN: 0419-4217

DT Dissertation

LA English

AB Effect of various food ingredients on lysozyme activity, a potential preservative, was studied. The amino acids, **histidine**, **lysine**, glycine, and cysteine; a 40% glucose solution; and some curing ingredients and spices (mustard and pepper) were found to enhance lysozyme activity. **Aspartame** and carrageenan decreased lysozyme activity to 84.8 and 66.7%, resp. Lysozyme activity must be maintained for the shelf life of the product; activity was, therefore, monitored in various media including food solutions for 1 yr. Lysozyme activity was either potentiated or had slopes not significantly different from 0 in 1% boric acid; 4% NaCl; 0.03% sodium benzoate; 5, 10 or 15% ethanol; and 20% glycerol. Initial lysozyme activity was 87% in Coors.RTM. Light beer, where a slope of -0.0007 (days) was maintained. Activity remained higher in soft drinks sweetened with corn syrup than those artificially sweetened. Lysozyme activity was unstable in distilled water, cola beverage and white wine. Bactericidal properties of lysozyme alone or with other antimicrobials were studied in vitro and in hot dogs and hamburger against 3 pathogens: Salmonella, Listeria monocytogenes ATCC 35152 and Staphylococcus aureus ATCC 69129. Lysozyme and nisin were bactericidal against L. monocytogenes in vitro at 9.27 and 212.8 .mu.g/ml, resp. The combination of 12.5 .mu.g/ml nisin and 5 mg/ml lysozyme were synergistic in hot dogs against L. monocytogenes where counts were reduced on day 1, 2 or 3 by 3, 3 or 2 log.sub.1.sub.0 cycles, resp. The same concn. of lysozyme and nisin/g, with or without EDTA, were also synergistic against S. aureus in hot dogs, reducing growth by 2 and 3 log.sub.1.sub.0 cycles over the 3 days. In hamburger, lysozyme or nisin were effective at reducing L. monocytogenes counts, but they were not synergistic. [From En summ.]

CC C (Hygiene and Toxicology)

CT ENZYMES; FOOD SAFETY; GLYCOSIDASES; INHIBITION; LYSOZYMES; MEAT PRODUCTS; MICROORGANISMS; ANTIMICROBIAL ACTIVITY; CARBOHYDRASES; FOODS

L3 ANSWER 11 OF 64 FSTA COPYRIGHT 2002 IFIS

AN 1991(01):T0006 FSTA

TI Molecular design of inverted-**aspartame**-type sweeteners.

AU Nosho, Y.; Seki, T.; Kondo, M.; Ohfuji, T.; Tamura, M.; Okai, H.

CS Correspondence (Reprint) address, H. Okai, Dep. of Fermentation Tech., Fac. of Eng., Hiroshima Univ., Higashihiroshima, Hiroshima 724, Japan

SO Journal of Agricultural and Food Chemistry, (1990), 38 (6) 1368-1373, 18

ref.
ISSN: 0021-8561
DT Journal
LA English
AB During a study of salty peptides, some basic dipeptides, e.g. Gly-Lys, had no salty taste but a sweet taste of the same potency as sucrose. The sweetness of such peptides was related to the theory of the trifunctional unit AH-B-X (acidic proton, electronegative centre, hydrophobic group, resp.), and the compound benzoyl-Gly-Lys was synthesized. As, in accordance with the theory, this compound had a higher sweetness potency than Gly-Lys, a series of peptides was synthesized to obtain more effective sweeteners. Because of the relative orientation of the AH-B-X groups about the peptide bond [X is on the N-terminal, and the AH-B system on the C-terminal] these peptides are termed inverted-**aspartame** -type sweeteners [in **aspartame**, X is on the C-terminal]. Physicochemical and sweetness properties of 25 compounds are reported. In the series of peptide sweeteners investigated, **lysine** gave the optimum distance between AH and B. The phenyl group was adequate for the hydrophobic group X. The optimum total C number between AH-B and X was 6 or 7. The compound Ph-Ac-Gly-Lys has a sweetness potency 50x that of sucrose. None of the compounds studied had the methyl ester function that is essential in **aspartame** (in the inverted-type sweeteners, the B group is the C-terminal carboxylate group). This lack of ester function is considered an advantage with respect to stability in solution and avoidance of methanol production. It is also expected that the inverted-**aspartame**-type sweeteners can be synthesized more cheaply than **aspartame**.
CC T (Additives, Spices and Condiments)
CT ADDITIVES; FLAVOUR; SWEETENERS; SWEETNESS

L3 ANSWER 12 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1989(04):B0028 FSTA
TI Biotechnology in Korea.
AU Lim, B. S.
CS Res. & Development Cent., Miwon Co. Ltd., 720 Banghak-dong, Dobong-ku, Seoul, Korea Republic
SO International Industrial Biotechnology, (1988), 8 (6) 10-16, 14 ref.
ISSN: 0269-7815
DT General Review
LA English
AB The state of the art of biotechnology in Korea, with particular reference to the technology devoted to traditional fermented foods, is described and discussed. Types of fermented foods considered include: soybean products prepared from Meju starter (soy sauce [Kanjang], soybean paste [Doenjang] and hot soybean paste [Kochujang]); cereal products prepared from Nuruk starter (alcoholic liquors including rice wines [Takju, Yakju and Chungju], millet wine [Kaolianju], and wheat spirit [Soju] and non-alcoholic beverages [Sikhae]); vegetable products (Kimchi, assorted varieties with different seasonings, such as fermented fishery products); and fishery products (collectively known as Jeotkal or Jeot) based on salted fish and shellfish (approx. 30 varieties available). Additional aspects considered which are of interest to the food sector inlude: amino acid production (L-glutamic acid, L-**lysine**, L-phenylalanine, L-glutamine, L-leucine, L-threonine and L-**tryptophan**); production of nucleic acid-related substances (5'-inosine monophosphate, 5'-guanosine monophosphate [used mainly as seasonings for coating monosodium glutamate particles], 5'-xanthosine monophosphate, 5'-uridine monophosphate, 5'-cytidine monophosphate, 5'-adenosine monophosphate, uracil, uridine, cytosine, cytidine, adenine and guanine); antibiotic and insecticide production; enzyme production (enzyme products include crude preparations for alcohol and Takju production, liquefying enzymes for the food industry, meat tenderizing enzymes, heat stable .alpha.-amylase,

glucose isomerase, rennin, cellulase, alkaline protease and lipase); modified starch manufacture; and sweetener production (fructo-oligosaccharide and **aspartame**).
CC B (Biotechnology)
CT BIOTECHNOLOGY; PROCESSING; REVIEWS; ASIA; BIOTECHNOLOGY INDUSTRY; DEVELOPMENTS; INDUSTRY; KOREAN; PRODUCT TECHNOLOGY; REVIEW

L3 ANSWER 13 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1989(02):A0022 FSTA
TI Chemistry and kinetics of Maillard reaction.
AU Huang, T. C.
CS Rutgers Univ., New Brunswick, NJ 08903, USA
SO Dissertation Abstracts International, B, (1988), 48 (11) 3166-3167: Order no. DA8723252, 176pp.
ISSN: 0419-4217
DT Dissertation
LA English
AB 2 model systems, **aspartame**-glucose and histamine-glucose, were used to study the chemistry and kinetics of Amadori rearrangement. A combination of Sep-Pak cartridge adsorption and Sephadex G-25 column chromatography was used to isolate and purify the Amadori compounds, 5 of which were identified by a combination of .sup.1.sup.3C NMR and FAB-MS. 4 model systems, glycine-glucose, **histidine**-glucose, **lysine**-glucose and **arginine**-glucose, were used to study the chemistry and kinetics of pyrazine formation. 9 common pyrazines were identified in all 4 systems. Under the experimental conditions used, all the reactions were found to be pseudo-zero-order reactions. Activation energy was higher for pyrazine formation than for Amadori compound formation. **Aspartame** degradation had the lowest activation energy.
CC A (Food Sciences)
CT MAILLARD REACTION; KINETICS

L3 ANSWER 14 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1988(08):T0011 FSTA
TI Analysis of the sweetener **aspartame** by capillary isotachophoresis.
AU Kvasnicka, F.
CS Dep. of Chem. & Tech. of Saccharides, Fac. of Food & Biochem. Tech., Inst. of Chem. Tech., 166 28 Prague, Czechoslovakia
SO Journal of Chromatography, (1987), 390 (1) 237-240, 8 ref.
ISSN: 0021-9673
DT Journal
LA English
AB This paper reports the development of a simple, sensitive and rapid capillary isotachophoresis method for detn. of the low-calorie artificial sweetener **aspartame** in various soft drinks, yoghurt and black coffee. Anionic analysis of the sweetener was performed with a leading electrolyte comprising 5mM acetic acid + Tris (pH 7.7) and a terminating electrolyte of 5mM L-**histidine** + Tris (pH 7.8); each analysis required 15-20 min. Recovery was in the range 96-101% at all levels of **aspartame** addition and the detection limit was 1.8 .mu.g/ml (chart speed 6 cm/min). A detection limit of 0.2 .mu.g/ml (chart speed 15 cm/min) could be achieved by using a system with 2 leading electrolytes, namely 5mM acetic acid + Tris (pH 7.7) in the pre-separation capillary and 1mM acetic acid + Tris (pH 7.7) in the separation capillary. The isotachophoresis method can also be used to check the purity of **aspartame**.
CC T (Additives, Spices and Condiments)
CT ADDITIVES; ANALYTICAL TECHNIQUES; **ASPARTAME**; BEVERAGES; COFFEE; SOFT DRINKS; SWEETENERS; YOGHURT; BLACK; FOODS; ISOTACHOPHORETIC; ISOTACHOPORETIC

L3 ANSWER 15 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1988(08):B0013 FSTA
TI Cloning of a gene cluster of aro B, aro E and aro L for aromatic amino acid biosynthesis in Brevibacterium lactofermentum, a glutamic acid-producing bacterium.
AU Matsui, K.; Miwa, K.; Sano, K.
CS Cent. Res. Lab., Ajinomoto Co. Ltd., Kawasaki-ku, Kawasaki 210, Japan
SO Agricultural and Biological Chemistry, (1988), 52 (2) 525-531, 40 ref.
ISSN: 0002-1369
DT Journal
LA English
AB Interest in Brevibacterium lactofermentum synthesis of aromatic amino acids centres on the production of phenylalanine and **tryptophan**, which are required, resp. for **aspartame** sweeteners, and as an ingredient of medicines and animal feeds. The present paper describes the successful cloning of the aro L gene encoding the shikimate kinase enzyme of B. lactofermentum.
CC B (Biotechnology)
CT AMINO ACIDS; **ASPARTAME**; BACTERIA; BREVIBACTERIUM; GENETICS; MICROORGANISMS; PROCESSING; SWEETENERS; BREVIBACTERIA BIOSYNTHESIS; LACTOFERMENTUM GENETIC MANIPULATION # AROMATIC; PHENYLALANINE; PRODUCT TECHNOLOGY

L3 ANSWER 16 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1987(05):T0055 FSTA
TI [High performance reversed-phase liquid chromatographic resolution of enantiomers of amino acids with **aspartame**-copper (II) in the mobile phase.]
AU Kato, S.; Kamakura, H.; Ariizumi, S.
CS Nat. Inst. of Hygienic Sci., 18-1, Kamiyoga 1-chome, Setagaya-ku, Tokyo, Japan
SO Journal of the Food Hygienic Society of Japan [Shokuhin Eiseigaku Zasshi], (1986), 27 (3) 272-277, 9 ref.
DT Journal
LA Japanese
SL English
AB Enantiomers of DL-amino acids certified as food additives were separated by HPLC using a reversed-phase column and a chiral mobile phase containing **aspartame** cupric chloride (APM Cu (II)). The column used was Nucleosil .sub.5C.sub.1.sub.8 packed in a tube of 4 x 150 mm internal diam. The mobile phase was water containing 1mM APM-Cu(II) and methanol; suitable concn. of methanol were 30-40% for **tryptophan** and 10-20% for methionine. The mobile phase for alanine was 0.1mM APM-Cu(II) in water. The enantiomers of these amino acids were separated completely. The separation of L- and D-threonine was not complete, but each isomer could be identified with 0.025mM APM-Cu(II) in water as the mobile phase.
CC T (Additives, Spices and Condiments)
CT ADDITIVES; AMINO ACIDS; HIGH PERFORMANCE LIQUID CHROMATOGRAPHY; ISOMERS; SEPARATION; AMINO ACIDS ENANTIOMERS ADDITIVES; ENANTIOMERS; HPLC

L3 ANSWER 17 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1985(12):T0051 FSTA
TI The effect of **saccharin** on the microbial metabolism of **tryptophan** in man.
AU Roberts, A.; Renwick, A. G.
CS Clinical Pharmacology Group, Univ. of Southampton, Med. & Biol. Sci. Building, Bassett Crescent East, Southampton SO9 3TU, UK
SO Food and Chemical Toxicology, (1985), 23 (4/5) 451-455, 37 ref.
DT Journal
LA English
AB 15 human volunteers took **saccharin** (438 mg of the hydrated

sodium salt, equivalent to 333 mg of **saccharin** acid) three times daily at the start of a meal. Daily urinary excretion of indican was measured before, during and after chronic **saccharin** ingestion. The ingestion of **saccharin** for 1 month did not significantly increase the urinary excretion of indican. These findings are consistent with epidemiology studies which show the absence of a consistent excess risk of cancer of the urinary bladder in humans ingesting **saccharin** as a food additive.

CC T (Additives, Spices and Condiments)
CT CARCINOGENICITY; CARCINOGENS; **SACCHARIN**

L3 ANSWER 18 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1985(12):T0049 FSTA
TI The microbial metabolism of **tryptophan** in rats fed a diet containing 7.5% **saccharin** in 2-generation protocol.
AU Sims, J.; Renwick, A. G.
CS Clinical Pharmacology Group, Univ. of Southampton, Med. & Biol. Sci. Building, Bassett Crescent East, Southampton SO9 3TU, UK
SO Food and Chemical Toxicology, (1985), 23 (4/5) 437-444, 19 ref.
DT Journal
LA English
AB Sodium **saccharin** was fed at 7.5% in the diet to rats in a 2-generation protocol. This resulted in an increased formation of indole which is a co-carcinogen for the rat urinary bladder. This would contribute to the development of tumours of the urinary bladder under such conditions.
CC T (Additives, Spices and Condiments)
CT CARCINOGENICITY; CARCINOGENS; **SACCHARIN**

L3 ANSWER 19 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1985(09):T0025 FSTA
TI Structure-activity relationships in sweeteners. II. Saccharins, acesulfames, chlorosugars, tryptophans and ureas.
AU Heijden, A. van der; Wel, H. van der; Peer, H. G.
CS Unilever Res. Lab. Vlaardingen, PO Box 114, 3130 AC Vlaardingen, Netherlands
SO Chemical Senses, (1985), 10 (1) 73-88, 24 ref.
DT Journal
LA English
AB The previously introduced conceptual parameters (.alpha., .delta., .omega. and S, see preceding abstr.) to describe the stereochemical requirements for organic compounds to taste sweet, were applied to another series of sweeteners and to some well-known potent substances. With the help of an adapted STERIMOL computer program, the positions of relevant, hydrophobic side chains were determined in ureas, saccharins, tryptophans, chlorosugars and **acesulfame** derivatives in relation to their AH-B moieties. Results were compared with previous findings for 5 other homologous series of sweeteners. There is evidence to suggest that 6-substituted **acesulfame** derivatives and **saccharin** employ the same receptor site. .delta. in 5-substituted **acesulfame** derivatives coincides with that of sulphamates calculated earlier. .delta. in 6-chloro-D -**tryptophan** was found to be at equal distances from H and B, a position which was earlier also observed for the methyl ester group in **aspartame**. In the dulcin series of the urea derivatives, 2 AH-B moieties can be distinguished: the HN-CO group gives rise to .alpha., .delta. and .omega.'s which fit in the earlier calculated nitroaniline receptor site, while for the OC-NH.sub.2 group they are located near those found for isocoumarins. The chlorine atoms in 1?-dichlorosucrose are located above and below the plane of the pyranose ring at almost the same positions with respect to the OH groups at positions ? and 4 (in fact, 2 equal .delta.'s), which are supposed to form the AH-B moiety. The high relative sweetness values of 1,6-dichlorosucrose

and 1,4,6-trichlorogalactosucrose are most probably due to the fact that both sweeteners can interact with the receptor site in 2 ways (as such and upside-down). It is remarkable that the average .delta. positions belonging to sweeteners with similar AH-B moieties are located very close to each other.
CC T (Additives, Spices and Condiments)
CT CHEMISTRY; FLAVOUR; **SACCHARIN**; SWEETENERS; **TRYPTOPHAN**; UREA; BINDING; DERIVATIVES; SITES STEREOCHEMISTRY; SWEETNESS

L3 ANSWER 20 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1985(07):T0001 FSTA
TI Sweetener composition and sweetening method.
IN Nakajima, N.
PA Takeda Chemical Industries Ltd.
SO European Patent Application, (1984)
PI EP 122400 A1
DT Patent
LA English
AB A sweetener composition was prepared by admixing **acesulfame** K with 1 members from the group: alanine, glycine, **histidine**, **arginine**, glutamate, glutamic acid and its sodium salt, sodium 5-inosinate, sodium 5-guanylate, tartaric acid and its salts, and disodium phosphate. Thus, the bitter taste resulting when **acesulfame** K is used alone is considerably mitigated to impart improved quality sweetness. The composition is useful for sweetening foods or pharmaceutical products.
CC T (Additives, Spices and Condiments)
CT PATENTS; SWEETENERS; COMPOSITION; PATENT

L3 ANSWER 21 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1985(07):C0025 FSTA
TI Nutritional and toxicological aspects of food safety.
AU Friedman, M. (Editor); Stich, H. F.; Rosin, M. P.; Brandon, D. L.; Berry, D. L.; Helmes, C. T.; Masri, M. S.; Byard, J. L.; Smith, T. K.; Carson, M. S.; Omaye, S. T.; Willhite, C. C.; Ferm, V. H.; Gruenwedel, D. W.; Gaffield, W.; Keeler, R. F.; Livingstone, A. L.; Knuckles, B. E.; Teuber, L. R.; Hesterman, O. B.; Tsai, L. S.; Lynch, S. C.; Russell, G. F.; Hotchkiss, J. H.
CS W. Reg. Res. Cent., ARS, USDA, Berkeley, California, USA Price $79.50
SO Advances in Experimental Medicine and Biology, (1984), 177, xii + 584pp. ISBN 0-306-41708-1, many ref.
DT Journal
LA English
AB This volume comprises the following monographs. Naturally-occurring phenolics as antimutagenic and anticarcinogenic agents, by H. F. Stich & M. P. Rosin (pp. 1-29, many ref.). Sulphydryl groups and food safety, by M. Friedman (pp. 31-63, many ref.). Interactions of diet and immunity, by D. L. Brandon (pp. 65-90, many ref.). Role of epigenetic factors in dietary carcinogenesis, by D. L. Berry & C. T. Helmes (pp. 91-113, many ref.). Defences against aflatoxin carcinogenesis in humans by M. S. Masri (pp. 115-146, 33 ref.). Metabolism of food toxicants: **saccharin** and aflatoxin B.sub.1, a contrast in metabolism and toxicity, by J. L. Byard (pp. 147-151, 18 ref.). Effect of diet on T-2 toxicosis, by T. K. Smith & M. S. Carson (pp. 153-167, 40 ref.). Safety of megavitamin therapy, by S. T. Omaye (pp. 169-203, many ref.). Prenatal and developmental toxicology of arsenicals, by C. C. Willhite & V. H. Ferm (pp. 205-228, many ref.). Differential effects of sodium selenite and methylmercury (II) on membrane permeability and DNA replication in HeLa S3 carcinoma cells: a preliminary report regarding the modification of organomercurial toxicity by selenium compounds, by D. W. Gruenwedel (pp. 229-240, 24 ref.). Structure and stereochemistry of steroidal amine teratogens, by W. Gaffield & R. F. Keeler (pp. 241-251, 37 ref.). Minimizing the saponin content of alfalfa sprouts and leaf protein

concentrates, by A. L. Livingstone, B. E. Knuckles, L. R. Teuber, O. B. Hesterman & L. S. Tsai (pp. 253-268, 30 ref.). The influence of 1-(N-L -**tryptophan**)-1-deoxy-D -fructose [FRU-TRP] and its N-nitrosated analogue [NO-FRU-TPP] on the viability and intracellular synthetic activity (DNA, RNA and protein synthesis) of HeLa S3-carcinoma cells, by D. W. Gruenwedel, S. C. Lynch & G. F. Russell (pp. 269-285, 29 ref.). Sources of N-nitrosamine contamination in foods, by J. H. Hotchkiss (pp. 287-298, 47 ref.). [Continued in following abstr.]
CC C (Hygiene and Toxicology)
CT BOOKS; NUTRITION; TOXICITY; BOOK; FOODS; NUTRITIONAL

L3 ANSWER 22 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1983(05):L0358 FSTA
TI [Possible use of energy-free sweeteners.]
AU Lindner, K.
CS Kereskedelmi es Vendeglato Foeiskola, Budapest, Hungary
SO Konzerv- es Paprikaipar, (1982), No. 1, 24-25
DT Journal
LA Hungarian
SL German; Russian
AB The properties of the most commonly used sweeteners, such as **saccharin**, cyclamates, dihydrochalcones, **aspartame**, D -6-chloro-**tryptophan**, Miraculin, Monellin and Thaumatin, and the characteristics of some soft drinks and foods sweetened by dihydrochalcone are discussed and tabulated.
CC L (Sugars, Syrups and Starches)
CT BEVERAGES; SOFT DRINKS; SWEETENERS; DI-HYDROCHALCONE SWEETENED; FOODS

L3 ANSWER 23 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1981(06):T0330 FSTA
TI Cell culture tumor promotion experiments with **saccharin**, phorbol myristate acetate and several common food materials.
AU Sivak, A.; Tu, A. S.
CS Bio/Med. Sci. Section, Arthur D. Little, Inc., Acorn Park, Cambridge, Massachusetts 02140, USA
SO Cancer Letters, (1980), 10 (1) 27-32, 16 ref.
DT Journal
LA English
AB In order to obtain additional information on the possible tumour-promoting potential of **saccharin** etc., the BALB/c-3T3 cell neoplastic transformation system was modified to examine the tumour promoting activity of a set of substances. Following initiation of the target cells with 3-methylcholanthrene, treatment of the cultures with phorbol myristate acetate (PMA, 0.01 .mu.g/ml; 1.5 x 10.sup.-.sup.8M) during the remainder of the 4-wk assay interval resulted in a marked increase in both spontaneous and initiated Type III transformed foci. In contrast, a similar treatment with **saccharin** at 20, 100 or 500 .mu.g/ml (0.08, 0.4 or 2.1 x 10.sup.-.sup.3M) did not influence the occurence of Type III transformed foci and did not result in a promoting response. Sodium ascorbate (2.53 x 10.sup.-.sup.3M) and L -**tryptophan** (2.45 x 10.sup.-.sup.3M) almost completely inhibited both spontaneous and initiated Type III transformed foci. Calcium pantothenate (2.10 x 10.sup.-.sup.3M) exhibited a marginal promoting effect. Under the conditions of this study in which the classical tumour promoter PMA was highly active in promoting Type III transformed foci, **saccharin** was not active as either a direct transforming or promoting agent at doses up to 5 orders of magnitude higher.
CC T (Additives, Spices and Condiments)
CT CARCINOGENS; **SACCHARIN**; TOXICITY; TUMOUR PROMOTION

L3 ANSWER 24 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1981(05):T0216 FSTA

TI Sweeteners and health.
CS World Sugar Research Organisation Ltd.; 58 Jermyn Street, London, SW1, UK
SO (1979), 38pp., many ref.
DT Book
LA English
AB This booklet includes chapters on: nutritive sweeteners i.e. saccharides (glucose, fructose, high-fructose syrup, lactose, maltose, galactose, sorbose); polyols (sorbitol, xylitol, lycasin, palatinit); non-nutritive sweeteners, i.e. synthetics (cyclamates, **saccharin**, Acesulfam-K, **aspartame**, **tryptophan** derivatives, terpene oxime derivatives, alkoxy aromatic amines, sucrose derivatives e.g. 1',4,6'' trichlorodeoxy galacto sucrose); and non-synthetics (dihydrochalcone sweeteners, talin, phyllodulcin, stevioside, glycyrrhizin, Lo Han Kno, osladin, miracle fruit, serendipity berries - monellin). In addition to brief descriptions of the alternative sweeteners, this booklet indicates some practical considerations to be borne in mind when sugar substitution is considered.
CC T (Additives, Spices and Condiments)
CT BOOKS; SWEETENERS; BOOK

L3 ANSWER 25 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1981(02):T0057 FSTA
TI Health and sugar substitutes.
AU Guggenheim, B. (Editor); European Research Group for Oral Biology [20th Symposium]; Schneider, P.; Cohen, S. M.; Jacobs, J. B.; Arai, M.; Friedell, G. H.; Munro, J. C.; Arnold, D. L.; Kessler, J. J.; Jakob, A.; Siebert, G.; Grupp, U.; Hill, M. J.; Imfeld, T.; Koenig, K. G.; Gehring, F.; Bowen, W. H.; Schreinin, A.; Maekinen, K. K.; Schmaehl, D.; Mehnert, H.; Kroes, R.; Mohr, U.; Green, U.; Althoof, J.
CS European Research Group for Oral Biology; Basel, Switzerland; S. Karger AG Dep. of Oral Microbiol. & General Immunology, Dental Inst., Univ. of Zurich, Zurich, Switzerland
SO (1979), vii + 351pp. ISBN 3-8055-2961-9, many ref.
DT Conference
LA English
AB [Continued from preceding abstr.] Syncarcinogenic action of **saccharin** and sodium cyclamate in the induction of bladder tumours in MNU-pretreated rats, by U. Mohr, U. Green, J. Aethoff and P. Schneider (pp. 64-69, 3 ref.). Co-carcinogenicity testing of **saccharin** and D l-**tryptophan** following oral initiation with N-[4-(5-nitro-2-furyl)-2-thiazolyl] formamide, by S. M. Cohen, J. B. Jacobs, M. Arai and G. H. Friedell (pp. 70-75, 6 ref.). Chronic bioassay review, by J. C. Munro and D. L. Arnold (pp. 76-81, 17 ref.). Non-nutritive sweeteners and human bladder cancer, by J. J. Kessler (pp. 85-90, 15 ref.). Hepatic metabolism of xybitol, by A. Jakob (pp. 98-102, 4 ref.). .alpha.-D -glucanopyranosido-1,6 sorbitol and .alpha.-D -glucanopyranosideo-1,6 mannitol (Palatinit), by G. Siebert and U. Grupp (pp. 109-113, 5 ref.). Microbial metabolism in the lower gut, by M. J. Hill (pp. 120-122, 5 ref.). In-vivo assessment of plaque acid production. A long-term retrospective study, by T. Imfeld (pp. 218-223, 10 ref.). Testing of sugar substitutes in animals with special reference to non-specific effects, by K. G. Koenig (pp. 224-228, 9 ref.). Cariogenic properties of sugar substitutes examined in gnotobiotic rat experiments, by F. Gehring (pp. 229-234, 17 ref.). Metabolic criteria indicative of cariogenicity in primates, by W. H. Bowen (pp. 235-240, 14 ref.). Clinical trials on sugar substitutes, by A. Schreinin (pp. 241-246, 22 ref.). Setting criteria for appropriateness of various carbohydrate sweeteners, by K. K. Maekinen (pp. 247-252, 16 ref.). Value of toxicological testing in chemical carcinogenicity, by D. Schmaehl (pp. 260-261). Advantages and disadvantages of artificial sweeteners and sugar substitutes, by H. Mehnert (pp. 262-265, 4 ref.). Evaluation of results of animal data with respect to extrapolation, by R. Kroes (pp. 272-276, 4 ref.). A further 25

papers are of direct food interest, and are abstracted separately; they are listed in the author index under European Research Group for Oral Biology [20th Symposium].
CC T (Additives, Spices and Condiments)
CT CONFERENCE PROCEEDINGS; HEALTH; SUGAR; SWEETENERS; PROCEEDINGS; SUGAR SUBSTITUTES

L3 ANSWER 26 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1981(01):T0001 FSTA
TI [Influence of water soluble vitamins and essential amino acids on the stability of sodium **saccharin** and sodium cyclamate under thermal treatment.]
Einfluss von wasserloeslichen Vitaminen und essentiellen Aminosaeuren auf die Stabilitaet von Natriumsaccharin und Natriumcyclamat bei thermischer Behandlung.
AU Kroyer, G.; Washuettl, J.
CS Inst. fuer Lebensmittelchemie und -Tech., Tech. Univ. Wien, Getreidemarkt 9, A-1060 Vienna, Austria
SO Lebensmittel-Wissenschaft und -Technologie, (1979), 12 (5) 284-286, 12 ref.
DT Journal
LA German
AB Thermal stability of sodium **saccharin** and sodium cyclamate was tested up to 250.degree. C in the presence of water soluble vitamins, essential amino acids and olive oil. Pure sodium **saccharin** was hardly destroyed at all when heated to 350.degree. for 1 h; however a reduction in the quantity of sodium **saccharin** occurred at relatively low temp. (150.degree.) with addition of a mixture of the water soluble vitamins C, B.sub.1, B.sub.2, B.sub.6, B.sub.1.sub.2, nicotinic acid amide and rutin, or a mixture of the essential amino acids isoleucine, leucine, **lysine**, methionine, phenylalanine, threonine, **tryptophan** and valine. Heat treatment of a mixture of sodium **saccharin** and olive oil resulted, on the other hand, in no marked loss of the sweetener. Thermal decomposition of sodium cyclamate was already observable at 200.degree. , both for the pure substance and for a mixture of sodium cyclamate and olive oil; no cyclamate could be detected after heating for 1 h at 250.degree. C. Following addition of water soluble vitamins or essential amino acids, sodium cyclamate was already completely destroyed at 200.degree. C. Simultaneously with the decomposition of sodium cyclamate, rising temp. was accompanied by increasing quantities of cyclohexamine, a toxic decomposition product of sodium cyclamate.
CC T (Additives, Spices and Condiments)
CT AMINO ACIDS; CYCLAMATES; HEATING; OLIVE OILS; **SACCHARIN**; SODIUM; STABILITY; SWEETENERS; THERMOPHYSICAL PROPERTIES; VITAMINS; CYCLAMATE; SODIUM CYCLAMATE; **SODIUM SACCHARIN**; THERMAL STABILITY

L3 ANSWER 27 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1980(11):A0822 FSTA
TI [Effect of sodium **saccharin** and sodium cyclamate on water soluble vitamins and essential amino acids.]
Der Einfluss von Natriumsaccharin und Natriumcyclamat auf wasserloesliche Vitamine und essentielle Aminosaeuren.
AU Kroyer, G.; Washuettl, J.
CS Inst. fuer Lebensmittelchem. & Tech., Tech. Univ. Wien, Vienna, Austria
SO Zeitschrift fuer Ernaehrungswissenschaft, (1979), 18 (2) 139-144, 9 ref.
DT Journal
LA German
SL English
AB Model experiments were conducted to investigate possible interactions between artificial sweeteners and components of foods. Sodium **saccharin** (SSA) and sodium cyclamate (SCY) were compared with

sucrose (SUC); quantities of each substance compared were 300 mg, 3.5 g and 10 g, resp. Aqueous solutions of **tryptophan** and phenylalanine stored at room temp. showed large decreases in amino acid content with SSA or SCY, but not with SUC. No effects with other essential amino acids were observed in aqueous solution, nor with the water-soluble vitamins studied, except for vitamins C and B.sub.1, which showed significant decreases in all cases. Treatment of vitamin C at 15.degree. C for 1 h in various dry mixes gave the following % decreases: heated alone 0; + SSA 93%; + SCY 11%; + SUC 9%. Corresponding results for vitamin B.sub.1 are 0, 33, 7 and 3%. Heat treatment (150.degree. C) of dry mixtures of sweeteners and essential amino acids showed significant reductions in contents of amino acid only for phenylalanine, **tryptophan** or methionine with SCY, and for phenylalanine with SSA. No decreases were observed with sucrose.

CC A (Food Sciences)

CT CYCLAMATES; **SACCHARIN**; SUCROSE; SWEETENERS; ARTIFICIAL; FOODS; MODELLING

L3 ANSWER 28 OF 64 FSTA COPYRIGHT 2002 IFIS

AN 1977(09):T0533 FSTA

TI Sweeteners and enhancers.

AU Pintauro, N. D.

CS Park Ridge, New Jersey, USA; Noyes Data Corporation

SO Food Technology Review, Noyes Data Corporation, (1977), No. 40, xi + 392pp. ISBN 0-8155-0652-X

DT Book

LA English

AB This book is based on US patents that deal with sweeteners and sweetness enhancers and their commercial technology. 11 British patents have been included to complete the technological picture. The information is arranged under the following headings: Miraculin, glycyrrhizin and artichoke sweeteners (pp. 3-34); Dipeptides (pp. 35-60) including aspartic acid alkyl esters, .alpha.-L-aspartyl derivatives; Chalcones and maltols (pp. 61-90) including flavanone glycoside dihydrochalcones, hesperetin dihydrochalcone; Other synthetic sweeteners (pp. 91-142) including diacetone glucose, **saccharin** amine salts, **tryptophan** derivatives, substituted tetrazoles, 8,9-epoxyperillartine sweeteners, 5-imino-4, 4-dimethyl-2-imidazolidinone, kynurenine derivatives, heliotropyl nitrile, 2-(3-bromopropoxyl)-5-nitroaniline, 3-amino-4-n-propoxybenzyl alcohol, PMCA, special oximes, stevioside, maltitol and lactitol sweeteners; **Saccharin** combinations and special formulations (pp. 143-178); Methods for increasing bulk of mixes (pp. 179-241); Sugar substitutes and speciality ingredients (pp. 242-287); Drinks, jellies, fruits and chewing gum (pp. 288-349); and Desserts and baked goods (pp. 350-385). Company, inventor and US patent number indexes are included.

CC T (Additives, Spices and Condiments)

CT BEVERAGES; BOOKS; PATENTS; SWEETENERS; BOOK; FOODS; PATENT; UNITED STATES OF AMERICA; USA

L3 ANSWER 29 OF 64 FSTA COPYRIGHT 2002 IFIS

AN 1975(07):T0284 FSTA

TI [Artificial sweeteners.]
Kuenstliche Suessstoffe.

AU Steinle, G.

CS Central Lab. der Sueddeutschen Zucker AG, 6719 Obrigheim 5, Wormser Strasse 1, Federal Republic of Germany

SO Zucker, (1975), 28 (1) 20-28, 134 ref.

DT General Review

LA German

SL English; French

AB The following synthetic sweeteners are reviewed with information on their

degree of sweetness and possible toxic side effects: **saccharin**, dulcin, cyclamate, stevioside, perillartine, "Ultrasweet" P400, product S23/46, Suosan, glucin, monellin and thaumatin, miraculin and osladin, dihydrochalcone, hydrofluorene derivatives and glycyrrhizin, DL-**tryptophan**, kynurenine derivatives, **aspartame**, glykergenic acid and acetosulpham.
CC T (Additives, Spices and Condiments)
CT FLAVOUR; REVIEWS; SWEETENERS; TOXICITY; REVIEW; SWEETNESS; SYNTHETIC; TASTE

L3 ANSWER 30 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1973(07):T0365 FSTA
TI [Foreign additives as risk factors.] Fremdstoffzusaetze als Risikofaktoren.
AU Saint Rat, L. de
CS Generalsekretariat der Internationalen Kommission der Landwirtschafts- & Lebensmittel-Ind., Paris, France
SO Ernaehrungsforschung, (1971), 16 (4) 481-492, 35 ref.
DT Journal
LA German
AB The sweetening effect, utilization, toxicity and carcinogenic effect of cyclamate are described; no uniform test results on the latter effect have been observed. The use of the following substitute sweetening agents is discussed: **saccharin**, **tryptophan**, various dipeptides, peryllartin, sterioside, Nigeria berries, xylite, glycorrhicin, naringin, neohesperidin, and tetrazole compounds. Use and toxicological properties of benzoic acid are also described.
CC T (Additives, Spices and Condiments)
CT SWEETENERS; TOXICITY; SYNTHETIC

L3 ANSWER 31 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1973(07):T0319 FSTA
TI Artificial sweeteners.
IN Nonomiya, T.; Ojima, T.; Yamaguchi, S.; Ito, M.
PA Ajinomoto Co. Inc.
SO United States Patent, (1973)
PI US 3717477
DT Patent
LA English
AB The sweetening potency and taste of **saccharin** sodium are improved by addition of even small amounts of D-**tryptophan**.
CC T (Additives, Spices and Condiments)
CT FLAVOUR; **SACCHARIN**; **TRYPTOPHAN**; SWEETNESS

L3 ANSWER 32 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1973(05):T0259 FSTA
TI Artificial sweeteners.
PA Ajinomoto Co. Inc.
SO British Patent, (1972)
PI GB 1297741
DT Patent
LA English
AB The unpleasant aftertaste of **saccharin**-containing sweet compositions is reduced by incorporation of **tryptophan**.
CC T (Additives, Spices and Condiments)
CT FLAVOUR; REDUCTION; **SACCHARIN**; AFTERTASTE; BITTER; TASTE

L3 ANSWER 33 OF 64 FSTA COPYRIGHT 2002 IFIS
AN 1970(09):A0283 FSTA
TI Studies on the taste of some sweet substances. I. Measurement of the relative sweetness. II. Interrelationships among them.
AU Yamaguchi, S.; Yoshikawa, T.; Ikeda, S.; Ninomiya, T.

SO Agricultural and Biological Chemistry, (1970), 34 (2) 181-97, 17 ref.
DT Conference
LA English
AB The relative efficacy of the following substances in eliciting equal taste intensity was examined: (i) D-fructose, (ii) D-glucose, (iii) D-xylose, (iv) D-sorbitol, (v) D-xylitol, (vi) D-mannitol, (vii) sodium cyclamate, (viii) sodium **saccharin**, (ix) glycine, (x) DL-alanine and (xi) D-**tryptophan**. A panel of 100 persons was employed, and sweetness of test samples of a given concn. was related to concn. of (xii) sucrose required to give equivalent sweetness. Quantitative relationships between sweetness and concn. were established and substances classified according to the shape of their taste intensity curves. Identical taste intensity patterns were found within the group (xii), (i) and (vii), and within the group (ii), (iii), (iv) and (vi). Precise definitions of the interactions of tastes (additive, mixing, suppressing, counteracting and synergistic) are given. I the substances tested, additive, mixing and synergistic effects were found, but no suppressing or counteracting effects. Interrelation among sugars was mostly additive; synergistic effect was observed between (xii) and (i) or (v), also between (viii), (vii) and some sugars. Results are summarized graphically and in tables. A mathematical expression of the synergistic effect was also applied to mixtures of (vii) with (xii), (vi) or (viii).
CC A (Food Sciences)
CT ALANINE; CYCLAMATES; FLAVOUR; FRUCTOSE; GLUCOSE; GLYCINE; MANNITOL; **SACCHARIN**; SODIUM; SORBITOL; SUGARS; SWEETENERS; **TRYPTOPHAN**; XYLITOL; GLUCITOL; SODIUM CYCLAMATE; SWEETNESS; TASTE; TESTING; XYLOSE

L3 ANSWER 34 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 570371 FROSTI
TI Electrochemical biosensors for food analysis and the food industry.
AU Palleschi G.; Cubadda R.
SO Italian Food and Beverage Technology, 2001, (September), (25), 5-15 (many ref.)
Published by: Chiriotti Editori spa Address: PO Box 66, Viale Rimembranza 60, 10064 Pinerolo, Italy Telephone: +39 (121) 393127 Fax: +39 (121) 794480 Email: info@chiriottieditori.it Web: www.chiriottieditori.it
DT Journal
LA English
SL English
AB Biosensors can provide good sensitivity, accuracy, reproducibility and high sample throughput for analysis of food safety and quality. This review describes the development and application of electrochemical biosensors for food analysis. The features, operation and performance of the following main types of electrochemical biosensor are discussed: oxygen electrodes, hydrogen peroxide electrodes, carbon-based mediated electrodes and NADH electrochemical sensors. The following applications are described: determination of damaged and gelatinized starch; lactate, lactose and glucose in milk; evaluation of curd ripening by analysis of L-lactic acid; malic and lactic acid in wine and grapes; bienzymic sensor for **aspartame**; electrochemical bioprobes coupled with conventional and microwave protein hydrolysis for **lysine**; a trienzyme electrode probe for the sequential determination of fructose and glucose; biosensor for detecting biogenic amines; and quality evaluation of peaches and nectarines by electrochemical and multivariate analyses.
SH ANALYSIS
CT ALCOHOLIC BEVERAGES; AMINO ACIDS; ANALYSIS; **ASPARTAME**; BEVERAGES; BIOSENSORS; CARBOHYDRATES; CARBON BASED MEDIATED ELECTRODES; DAIRY PRODUCTS; DETERMINATION; ELECTROCHEMICAL BIOSENSORS; ELECTRODES; ENZYME BIOSENSORS; ENZYME SENSORS; FRUCTOSE; FRUITS; GLUCOSE; GRAPES;

HYDROGEN PEROXIDE ELECTRODES; LACTOSE; **LYSINE**; MILK; NADH ELECTRODES; NECTARINES; OXYGEN ELECTRODES; PEACHES; POLYSACCHARIDES; QUALITY CONTROL; REVIEW; SAFETY; SENSORS; SOFT FRUIT; STARCH; SUGARS; SWEETENERS; WINE
DED 11 Dec 2001

L3 ANSWER 35 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 561814 FROSTI
TI Racemization of amino acids during classical and microwave oven hydrolysis - application to **aspartame** and a Maillard reaction system.
AU Stenberg M.; Marko-Varga G.; Oste R.
SO Food Chemistry, 2001, (August), 74 (2), 217-224 (22 ref.)
Published by: Elsevier Science Ltd Address: PO Box 211, 1000 AE Amsterdam, The Netherlands Telephone: +31 (20) 4853757 Fax: +31 (20) 4853432 Email: nlinfo-f@elsevier.nl Web: www.elsevier.nl/locate/foodchem
ISSN: 0308-8146
DT Journal
LA English
AB The racemization of amino acids during classical and microwave oven hydrolysis was studied using **aspartame**, and a Maillard reaction system. The extent of racemization could be reduced using the microwave technique, but only at temperatures below 150 C. The same effect was achieved using mild conventional hot oven hydrolysis. **Aspartame** did not undergo racemization under acidic or neutral conditions. Only limited racemization was observed when **aspartame** was added to a cola drink. The Maillard reaction model system containing **lysine** and glucose showed no racemization beyond that induced by hydrolysis.
SH PROCESSING
CT AMINO ACIDS; **ASPARTAME**; COOKING; DEGRADATION; HEATING; HYDROLYSIS; **LYSINE**; MAILLARD REACTION; MICROWAVE HYDROLYSIS; OVEN HYDROLYSIS; PROCESSING; RACEMIZATION; SWEETENERS
DED 4 Sep 2001

L3 ANSWER 36 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 536936 FROSTI
TI Kinetics of interaction of vanillin with amino acids and peptides in model systems.
AU Chobpattana W.; Jeon I.J.; Smith J.S.
SO Journal of Agricultural and Food Chemistry, 2000, (September), 48 (9), 3885-3889 (17 ref.)
ISSN: 0021-8561
DT Journal
LA English
SL English
AB Vanillin is the major compound in vanilla extract, responsible for its characteristic flavour. The intensity of vanilla flavour in foods is affected by proteins. The reaction kinetics of vanillin with pentalysine, **lysine**, glutathione, cysteine, **aspartame** and phenylalanine was studied in phosphate buffer at 55, 65 and 75 C. The reactions between vanillin and the amino acids and peptides followed first-order kinetics. The reaction rate of vanillin was highest with pentalysine and lowest with **aspartame**. The activation energy was calculated for each model system. The formation of reaction product between vanillin and phenylalanine followed zero-order kinetics.
SH ADDITIVES
CT AMINO ACIDS; FACTORS AFFECTING; FLAVOUR; FLAVOUR COMPOUNDS; FLAVOURINGS; INTERACTIONS; KINETICS; PEPTIDES; SENSORY PROPERTIES; VANILLIN
DED 7 Nov 2000

L3 ANSWER 37 OF 64 FROSTI COPYRIGHT 2002 LFRA

AN 525843 FROSTI
TI Potency of sweetness of **aspartame**, D-**tryptophan** and thaumatin evaluated by single value and time-intensity measurements.
AU Calvino A.; Garrido D.; Garcia M.
SO Journal of Sensory Studies, 2000, (March), 15 (1), 47-64 (31 ref.)
ISSN: 0887-8250
DT Journal
LA English
SL English
AB Food technologists use the potency of sweeteners as an index of the relative amounts required in formulations. The potencies of three peptide sweeteners - **aspartame**, D-**tryptophan** and thaumatin - were compared using single value measurements and time-intensity determinations. Results suggested that potency values obtained against a given sucrose concentration might not be extrapolated to other sucrose concentrations. The effectiveness of both methods for determining potency was demonstrated.
SH ANALYSIS
CT AMINO ACIDS; **ASPARTAME**; EVALUATION; FLAVOUR; SENSORY ANALYSIS; SENSORY PROPERTIES; SWEETENERS; SWEETNESS; THAUMATIN; **TRYPTOPHAN**
DED 29 Jun 2000

L3 ANSWER 38 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 503931 FROSTI
TI Amino acids and peptides.
AU Linden G.; Lorient D.
SO New ingredients in food processing: biochemistry and agriculture., Published by: Woodhead Publishing Ltd., Cambridge, 1999, 315-336 (0 ref.)
Linden G.; Lorient D.
ISBN: 1-85573-443-5
DT Book Article
LA English
AB The preparation of amino acids for use as functional food ingredients is described. The techniques include protein hydrolysis, the use of immobilized enzymes, and chemical synthesis. The chapter then describes the sources and properties of 'rare' free amino acids (including taurine, ciliatine, cysteine, lanthionine, sarcosine, betaine, morchelline, azetidine carboxylic acid, pipecolic acid, and guvaroline); the organoleptic properties and applications of amino acids (especially glutamic acid and **lysine**); the properties and applications of peptides (including **aspartame**, **alitame**, umami peptides, and amphiphilic peptides); and biologically active peptides produced from the hydrolysis of food proteins (opiate and anti-opiate peptides, anti-hypertensive peptides, mineral transporter peptides, immunomodifier peptides, and anti-thrombotic peptides). The preparation of phosphopeptides from caseins is illustrated; and tables are presented that show the flavour and threshold of detection of amino acids, and the biological activities of peptides produced by hydrolysis of food proteins.
SH PROTEINS
CT AMINO ACIDS; APPLICATIONS; COMPOSITION; DEGRADATION; FUNCTIONAL PROPERTIES; HYDROLYSIS; INGREDIENTS; MODIFICATION; MOLECULAR STRUCTURE; PEPTIDES; PRODUCTION; PROPERTIES
DED 30 Nov 1999

L3 ANSWER 39 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 508195 FROSTI
TI One step synthesis of inverted **aspartame** type sweetener, Ac-Phe-Lys, using chemically modified chymotrypsin.
AU Oaki J.; Nakahara K.; Tamura M.; Okai H.
SO Bioscience, Biotechnology, and Biochemistry, 1999, (July), 63 (7), 1156-1159 (12 ref.)

ISSN: 0002-1369
DT Journal
LA English
SL English
AB To elucidate techniques for simplified peptide synthesis, benzyloxycarbonyl chymotrypsin was prepared and used to synthesize acetyl-phenylalanyl-**lysine**, an inverted **aspartame** -type artificial peptide sweetener. Chemically modified chymotrypsin was used to couple **lysine** directly with acetyl-phenylalanine, producing acetyl-phenylalanyl-**lysine** in one step. Total yield from preparation and purification steps of the peptide sweetener was 13%, corresponding with that of the chemical synthesis method, while this yield was not achieved with enzymic synthesis using native chymotrypsin. Results suggested that the proposed method might be suitable for large-scale peptide synthesis.
SH ADDITIVES
CT ACETYL PHENYLALANYL **LYSINE**; **ASPARTAME**; CHYMOTRYPSIN; ENZYMES; PEPTIDES; PROTEINASES; SWEETENERS; SYNTHESIS; SYNTHETIC SWEETENERS
DED 23 Nov 1999

L3 ANSWER 40 OF 64 FROSTI COPYRIGHT 2002 LFPA
AN 427495 FROSTI
TI Evolution of the sweetness receptor in primates. II. Gustatory responses of non-human primates to nine compounds known to be sweet in man.
AU Nofre C.; Tinti J.M.; Glaser D.
SO Chemical Senses, 1996, 21 (6), 747-762 (42 ref.)
DT Journal
LA English
SL English
AB The dipeptide sweeteners **aspartame** and **alitame** have related structures, but **aspartame** tastes sweet only to some primate species, whereas **alitame** is sweet to all primates. This paper reports investigations of the sweetness response of 41 non-human primate species to nine related compounds perceived as sweet by humans. The compounds tested included glycine, D-phenylalanine, D-**tryptophan** and cyclamate. The behaviour of the test animals was evaluated by taste-induced hedonic modification of facial expression or by two-bottle preference test. The authors relate the findings to the multi-point attachment (MPA) theory of sweetness reception. They conclude that there are eight fundamental recognition sites on the human sweetness receptor.
SH PHYSICAL AND SENSORY
CT EVALUATION; FLAVOUR; HUMANS; INTENSITY; PERCEPTIONS; PRIMATES; RECEPTORS; SENSORY ANALYSIS; STRUCTURE; SWEET; SWEETENERS; SWEETNESS; TYPE
DED 23 Jan 1997

L3 ANSWER 41 OF 64 FROSTI COPYRIGHT 2002 LFPA
AN 338703 FROSTI
TI Dietary amino acids and brain function.
AU Fernstrom J.D.
SO Journal of the American Dietetic Association, 1994, 94 (1), 71-77 (53 ref.)
DT Journal
LA English
SL English
AB The biochemical function of large neutral amino acids, either aromatic or branched-chain, and acidic amino acids, with particular regard to their influence on brain function, is reviewed. The aromatic amino acids - **tryptophan**, tyrosine and phenylalanine - are precursors for the neurotransmitters serotonin, dopamine and norepinephrine. The influence of dietary protein, carbohydrate and fat on levels of these compounds in

blood and brain, and the effect of meal ingestion on the serum **tryptophan**/large neutral amino acid ratio, and hence on brain function and mood, is discussed. The suggestion that carbohydrate cravings are linked with brain serotonin is refuted. The possible link between cholesterol-lowering treatments and suicidal tendencies is also considered. The acidic amino acids aspartate and glutamate are themselves neurotransmitters. Literature providing evidence that dietary monosodium glutamate does not exert any toxic action in the brain unless it is in extremely large doses in rodent brains, and that ingestion of the artificial sweetener **aspartame**, which contains aspartate and phenylalanine, produces no adverse effects, is reviewed.

SH NUTRITION
CT AMINO ACIDS; **ASPARTAME**; ASPARTATES; BRAIN; CARBOHYDRATES; CHOLESTEROL; CRAVINGS; DIET; FATS; GLUTAMATES; MOOD; MSG; PHENYLALANINE; PROTEINS; REDUCTION; REVIEW; SEROTONIN; TOXICITY; **TRYPTOPHAN**; TYROSINE
DED 29 Mar 1994

L3 ANSWER 42 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 324775 FROSTI
TI High level expression in Saccharomyces cerevisiae of an artificial gene encoding a repeated tripeptide aspartyl-phenylalanyl-**lysine**.
AU Choi S.-K.; Lee S.Y.; Bock R.M.
SO Journal of Biotechnology, 1993, 30 (2), 211-223 (22 ref.)
DT Journal
LA English
SL English
AB A chemically synthesised gene, which encodes a repeated tripeptide aspartyl-phenylalanyl-**lysine**, was cloned on to the yeast expression vector pAM82 containing the PHO5 promoter. The artificial polypeptide was characterised. It was a potential raw material for the production of the artificial sweetener **aspartame**.
SH PROCESSING
CT **ASPARTAME**; BIOTECHNOLOGY; GENES; POLYPEPTIDES; PRODUCTION; SWEETENERS
DED 24 Sep 1993

L3 ANSWER 43 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 309588 FROSTI
TI The effects of sweeteners in primates.
AU Glaser D.
SO Sweet-taste chemoreception: proceedings of a symposium, Dizy, September 1991., Published by: Elsevier Applied Science Publishers, London, 1993, 353-363 (22 ref.)
Mathlouthi M.; Kanters J.A.; Birch G.G.; European Chemoreception Research Organization.
ISBN: 1-85166-883-7
DT Conference Article
LA English
AB The paper describes a study to investigate the behavioural manifestations demonstrated by non-human primates in response to sweet substances (sucrose, **tryptophan**, neohesperidin dihydrochalcone, monellin, thaumatin, **aspartame** and stevioside).
SH SWEETENERS
CT BEHAVIOUR; FLAVOUR; INTENSITY; PREFERENCES; PRIMATES; SWEET; SWEETENERS; SWEETNESS
DED 5 May 1993

L3 ANSWER 44 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 299523 FROSTI
TI Natural and synthetic sweet substances.
AU Krutosikova A.; Uher M.

SO Published by: Ellis Horwood Ltd., Chichester, 1992, 223pp
ISBN: 0-13-612805-X
DT Book
LA English
AB This comprehensive guide to natural and synthetic sweeteners contains information on the production, structure, sweetness potencies, applications and toxicity of a range of sweeteners. Consideration is given to physiological aspects of flavour perception, and the correlation between chemical structure and the sensory properties of natural and synthetic sweeteners. The section on natural sweeteners deals with saccharides (sucrose, glucose, fructose, starch hydrolysates, malt extract, polyols and L-saccharides), proteins, terpenoids, steroidal saponins, flavonoids and sweet taste modifiers; and the section on synthetic sweeteners deals with **saccharin**, cylamate, oxathiazinone dioxides, **aspartame** and derivatives of urea, **tryptophan**, benzene, triazole and tetrazole. The sensory properties of sweetener mixtures are discussed.
CT APPLICATIONS; CHEMICAL; CHEMICAL PROPERTIES; FACTORS AFFECTING; FLAVOUR; INTENSITY; NATURAL; NATURAL SWEETENERS; PROPERTIES; SENSORY; SENSORY PROPERTIES; STRUCTURE; SWEET; SWEETENERS; SWEETNESS; SYNTHETIC; SYNTHETIC SWEETENERS
DED 3 Dec 1992

L3 ANSWER 45 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 279004 FROSTI
TI The effect of **saccharin** on the microbial metabolism of tryphophanic man.
AU Roberts A.; Renwick A.G.
SO Food and Chemical Toxicology, 1985, 23 (4/5), 451-5 (30 ref.)
DT Journal
LA English
SL English
CT METABOLISM; **SACCHARIN**; TOXICITY; **TRYPTOPHAN**
DED 13 Feb 1992

L3 ANSWER 46 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 277269 FROSTI
TI The influence of dietary protein and amino acids on brain function.
AU Fernstrom J.D.
SO Trends in Food Science and Technology, 1991, 2 (8), 201-4 (27 ref.)
DT Journal
LA English
SL English
AB The aromatic amino acids (**tryptophan**, tyrosine and phenyl alanine), are precursors of neurotransmitters. The acidic amino acids (glutamate and aspartate) are themselves neurotransmitters in the brain. This article examines the mechanism by which each class of amino acids may affect brain neurotransmitter levels and brain function. Food ingestion increases the level of aromatic amino acids as substrates for the synthesis of neurotransmitters and possibly alters brain function. Dietary sources of glutamate and aspartate do not appear to have access to the brain and can only directly influence the brain when injected in very high doses. Studies with monosodium glutamate (MSG) and **aspartame** (which contains aspartate) are discussed.
SH BIOCHEMISTRY
CT AMINO ACIDS; **ASPARTAME**; ASPARTATES; CENTRAL NERVOUS SYSTEM; GLUTAMATES; MSG; PHENYLALANINE; **TRYPTOPHAN**; TYROSINE
DED 24 Jan 1992

L3 ANSWER 47 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 264015 FROSTI
TI The effects of high dietary concentrations of sodium **saccharin**

on in vivo metabolism of xenobiotics in rats.
AU Heaton G.D.; Renwick A.G.
SO Food and Chemical Toxicology, 1991, 29 (5), 305-12 (27 ref.)
DT Journal
LA English
SL English
AB A study was carried out to determine whether the increased microbial metabolism of **tryptophan** and tyrosine in rats due to **saccharin** consumption caused a change in the pattern of conjugation of phenolic compounds. In order to assess the influence of neonatal exposure, the study was carried out on rats of both sexes from a two-generation study. The effect of **saccharin** administration on the enzymes involved in the conjugation reactions and on the absorption of inorganic sulphate were investigated together with the the effect of incorporating cysteine, a source of sulphur into the diet.
CT COMPOUNDS; DRUGS; METABOLISM; PHENOLIC COMPOUNDS; PHENOLS; RATS; **SACCHARIN**; SWEETENERS
DED 4 Sep 1991

L3 ANSWER 48 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 241094 FROSTI
TI Comparison of the bladder response to indole and sodium **saccharin** ingestion by male rats.
AU Anderson R.L.; Lefever F.P.; Miller N.S.; Maurer J.K.
SO Food and Chemical Toxicology, 1989, 27 (12), 777-9 (8 ref.)
DT Journal
LA English
SL English
AB The effects of bladder mass increase and epitherial hyperplasia induced by dietary sodium **saccharin** in rats were compared with those induced by indole (an intermediate between **tryptophan** and indican). Results indicate that the bladder effects noted with sodium **saccharin** exposure are unlikely to be caused by the small increase in urinary indican excretion.
CT BLADDER CANCER; CANCER; EXCRETION; INDICAN; INDOLE; **SACCHARIN**; SODIUM **SACCHARIN**; SWEETENERS; TOXICITY
DED 3 Aug 1990

L3 ANSWER 49 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 166863 FROSTI
TI Distribution of free amino acids in honeys, considering particularly German and French heath honeys.
AU Speer K.; Montag A.
SO Deutsche Lebensmittel-Rundschau, 1986, 82 (8), 248-53 (10 ref.)
DT Journal
LA German
SL German; English; French
AB Different types of honey from varying geographical locations were investigated with regard to the amino acids they contained. The heath honeys were found to contain a larger amount of free amino acids than other honey varieties.
CT ALANINE; AMINO ACIDS; AMINOBUTYRIC ACID; AMINOISOBUTYRIC ACID; **ARGININE**; **ASPARTAME**; ASPARTIC ACID; ASPARTINE; BETA; GAMMA; GLUTAMIC ACID; GLUTAMINE; GLYCINE; **HISTIDINE**; HONEY; ISOLEUCINE; LEUCINE; **LYSINE**; **ORNITHINE**; PHENYLALANINE; PROLINE; QUANTITY; SERINE; THREONINE; TYPE; TYROSINE; VALINE
DED 9 Jan 1987

L3 ANSWER 50 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 165939 FROSTI
TI Effects of **aspartame** ingestion on the carbohydrate induced rise

in **tryptophan** hydroxylation in rat brain.
AU Fernstrom J.D.; Fernstrom M.H.; Grubb P.E.
SO American Journal of Clinical Nutrition, 1986, 44 (2), 192-205 (29 ref.)
DT Journal
LA English
SL English
AB Dietary factors which can affect brain serotoxin synthesis are discussed together with their significance in the ingestion of **aspartame**. However, it was shown from extrapolation of results from rat experiments that **aspartame** would only affect brain functions at very high levels. Such levels are unlikely to be consumed because of the sweetness intensity of **aspartame**.
CT **ASPARTAME**; BRAIN; FUNCTION; HEALTH; QUANTITY; SEROTONIN; SWEETENERS; TOXICITY; **TRYPTOPHAN**
DED 25 Nov 1986

L3 ANSWER 51 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 191280 FROSTI
TI Food constituents affecting normal and abnormal behaviors: Nutrition and the brain, vol. 7.
AU Wurtman R.J.; Wurtman J.J.
SO New York: Raven Press, 253pp., 1986
ISBN: 0-88167-142-6
DT Book
CT AMINO ACIDS; ANOREXIA; **ASPARTAME**; BEHAVIOUR; BRAIN; BULIMIA; DIET; FACTORS AFFECTING; NUTRIENTS; SWEETENERS; **TRYPTOPHAN**
DED 6 Jan 1987

L3 ANSWER 52 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 149614 FROSTI
TI Interactions of artificial sweeteners and food additives.
AU Kroyer G.; Washuttl J.
SO Recent developments in food analysis: Procs of 1st European Conf. on Food Chemistry, Vienna, 1981, ed. by W. Baltes, P.B. Czedik-Eysenberg, W. Pfannhauser. Verlag Chemie, 428-33 ., 1982
DT Book Article
LA English
SL English
CT AMINO ACIDS; ASCORBIC ACID; CAKES; COFFEE; CYCLAMATES; DEGRADATION; DRESSINGS; INTERACTIONS; JAMS; NUTRITIONAL VALUE; PHENYLALANINE; PUNCH; REDUCTION; **SACCHARIN**; SODIUM CYCLAMATE; SODIUM **SACCHARIN**; STABILITY; STORAGE; SWEETENERS; SYNTHETIC SWEETENERS; THIAMINE; **TRYPTOPHAN**; VINEGAR; VITAMINS
DED 19 Jun 1986

L3 ANSWER 53 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 143241 FROSTI
TI Artificial sweeteners.
PA Eli Lilly & Co.
SO West German Patent
PI DE 1967207
DT Patent
LA English
CT COMPOUNDS; CYCLAMATES; **SACCHARIN**; SWEETENERS; **TRYPTOPHAN**
DED 14 Dec 1981

L3 ANSWER 54 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 137143 FROSTI
TI Structure-activity relationships in sweeteners. II. Saccharins, acesulfames, chlorosugars, tryptophans and ureas.
AU van der Heijden A.; van der Wel H.; Peer H.G.

SO Chemical Senses, 1985, 10 (1), 78-88 (24 ref.)
DT Journal
LA English
SL English
AB The stereochemical requirements for organic compounds to taste sweet are described with reference to saccharins, acesulfames, chlorosugars, tryptophans and ureas.
CT ACESULFAM K; CHLOROSUGAR; FLAVOUR; INTENSITY; MOLECULAR STRUCTURE; PERCEPTIONS; PROPERTIES; **SACCHARIN**; STRUCTURE; SWEETENERS; SWEETNESS; **TRYPTOPHAN**; UREA
DED 25 Sep 1985

L3 ANSWER 55 OF 64 FROSTI COPYRIGHT 2002 LFPA
AN 132346 FROSTI
TI Effects of **aspartame** and glucose administration on brain and plasma levels of large neutral amino acids and brain 5-hydroxyindoles.
AU Yokogoshi H.; Roberts C.H.; Caballero B.; Wurtman R.J.
SO American Journal of Clinical Nutrition, 1984, 40 (1), 1-7 (27 ref.)
DT Journal
LA English
SL English
CT AMINO ACIDS; **ASPARTAME**; BRAIN; GLUCOSE; HEALTH; HYDROXYINDOLE; NEUTRAL; PHENYLALANINE; QUANTITY; SWEETENERS; **TRYPTOPHAN**; TYROSINE
DED 1 Feb 1985

L3 ANSWER 56 OF 64 FROSTI COPYRIGHT 2002 LFPA
AN 128091 FROSTI
TI **Saccharin** and **tryptophan** metabolism.
AU Anon.
SO Food and Chemical Toxicology, 1984, 22 (2), 177-8
DT Journal
LA English
AB Metabolic studies showed that **saccharin** affects caecal concentrations of **tryptophan**, indole and indole acetic acid. This could explain the carcinogenicity of **saccharin**, which although inert itself can increase the level of co-carcinogens bladder tumours, such as indole.
CT AMINO ACIDS; ANABOLISM; CARCINOGENS; FORMATION; INDOLE; MECHANISMS; METABOLISM; **SACCHARIN**; SWEETENERS; TOXICITY; **TRYPTOPHAN**
DED 31 Jul 1984

L3 ANSWER 57 OF 64 FROSTI COPYRIGHT 2002 LFPA
AN 122846 FROSTI
TI Dietary supplements and health aids - A critical evaluation. Part 2. Macronutrients and fiber.
AU Dubick M.A.
SO Journal of Nutrition Education, 1983, 15 (3), 88-93 (111 ref.)
DT Journal
LA English
SL English
Ab Health-promoting claims made for selected macronutrients and fibre were investigated. The following nutrients were examined: protein, gelatin, glycine, starch blockers, **aspartame**, **lysine**, **tryptophan**, digestive aids, superoxide dismutase, fructose, honey, choline, lecithin and dietary fibre. Recommended daily intakes, and side effects/toxic effects are covered.
CT AMINO ACIDS; ANTIDEPRESSANT; **ASPARTAME**; CARBOHYDRATES; CHOLINE; CITOLINE; DAILY INTAKE; DIET; DISEASES; ENZYMES; FIBRE; FOOD SAFETY; FORTIFYING AID; FRUCTOSE; GELATIN; GLUCOMANNANS; GLYCINE; HEALTH; HONEY; INTAKE; LECITHIN; LIPIDS; **LYSINE**; NUTRITIONAL VALUE; PROTEINS; RECOMMENDED; SAFETY; SEDATIVE; STARCH BLOCKER; SUPEROXIDE DISMUTASE;

SWEETENERS; TOXICITY; **TRYPTOPHAN**
DED 27 Jan 1984

L3 ANSWER 58 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 119084 FROSTI
TI Role of epigenetic factors in dietary carcinogenesis.
AU Berry D.L.; Helmes C.T.
SO Nutritional and toxicological aspects of food safety, edited by Friedman M. New York: Plinum Press, 91-113 (95 ref. En)., 1984
DT Book Article
CT BETEL; BHT; CANCER; CARCINOGENICITY; CARRAGEENAN; CYCLAMATES; DIET; DISEASE CONTROL; DISEASES; FATS; INHIBITION; PREVENTION; **SACCHARIN**; SALTS; SODIUM CYCLAMATE; SWEETENERS; TOXICITY; **TRYPTOPHAN**; VITAMINS
DED 28 Jan 1985

L3 ANSWER 59 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 99659 FROSTI
TI Sweetening compositions and process for preparing the same.
IN Ninomiya T.; Ojima T.; Yamagudi S.
PA Ajinomoto Company Incorporated.
SO UK Patent Application
PI GB 1297741
DT Patent
LA English
CT **SACCHARIN**; SODIUM **SACCHARIN**; SWEETENERS; **TRYPTOPHAN**
DED 1 Oct 1980

L3 ANSWER 60 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 95922 FROSTI
TI Molecular approaches to sweetness quantitation.
AU Hopfinger A.J.; Jabloner H.
SO The quality of foods and beverages; Chemistry and technology: Proceedings of the 2nd Int. flavour conference, Athens, July 1981, Vol. 1. ed. Charalambous G., Inglett G. Academic Press, 83-9 (10 ref. En)., 1981
DT Conference Article
CT **ASPARTAME**; FLAVOUR; INTENSITY; P 4000; PHYLLODULCIN; PROPYL SERINE; PROPYL THREONINE; STRUCTURE; SWEETENERS; SWEETNESS; TETRACHLOROGALACTOSUCROSE; **TRYPTOPHAN**
DED 14 Dec 1982

L3 ANSWER 61 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 95896 FROSTI
TI Co-carcinogenicity testing of **saccharin** and DL-**tryptophan** following oral initiation with N-(4-(5-nitro-2-furyl)-2-thiazolyl) formamide.
AU Cohen S.M.; Jacobs J.B.; Arai M.; Friedell G.H.
SO Health and sugar substitutes: Proceedings of the ERGOB conference, 1978. ed. Guggenheim B. Karger, 70-5 (6 ref. En)., 1979
DT Conference Article
CT CARCINOGENICITY; DETERMINATION; NITROFURYL THIAZOLYL FORMAMIDE; **SACCHARIN**; SWEETENERS; TOXICITY; **TRYPTOPHAN**
DED 14 Dec 1982

L3 ANSWER 62 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 81959 FROSTI
TI **Saccharin** combinations and special formulations.
AU Pintauru N.D.
SO Sweeteners and Enhancers, Food Technology Review No. 10, 143-78. NDC, 547
NTE 455+.458

DT Miscellaneous
CT BUFFERS; CALCIUM CHLORIDE; CALCIUM GLUCONATE; CHEMICAL; CITRATES; DIPEPTIDE SWEETENERS; DIPEPTIDES; FACTORS AFFECTING; FLAVOUR; GALACTOSE; GDL; LACTOSE; MALTOL; MANNITOL; OXAZOLIDINONE; PECTINS; PIPERAZINE; PROPERTIES; RIBONUCLEOTIDES; **SACCHARIN**; SODIUM CHLORIDE; SUGAR; SWEETENERS; TRYPTOHAN; **TRYPTOPHAN**; TYPE; US PATENT
DED 1 Oct 1980

L3 ANSWER 63 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 82958 FROSTI
TI Other synthetic sweeteners.
AU Pintauru N.D.
SO Sweeteners and Enhancers, Food Technology Review No. 10, 91-142. UDC, 547
NTE 455+.458
DT Miscellaneous
CT DIACETONE; EXTRACTION; GLUCOSE; HELIOTROPYL; KYNURENINE; LACTITOL; MALTITOL; MALTOSE; NITRILES; OXIME; PRODUCTION; **SACCHARIN**; STEVIOSIDE; SUBSTITUTES; SWEETENERS; SYNTHETIC SWEETENERS; TETRAZOLE; **TRYPTOPHAN**; TYPE; US PATENT
DED 1 Oct 1980

L3 ANSWER 64 OF 64 FROSTI COPYRIGHT 2002 LFRA
AN 70308 FROSTI
TI Gustatory responses in three prosimian and two simian primate species (Tupaia glis, Nycticebus coucang, Galago genegalensis, Callithrix jacchus jacchus and Saguinus midas niger) to six sweeteners and miraculin and their phylogenetic implications.
AU Hellekant G.; Glaser D.; Brouwer J.; Wel H. van der.
SO Chemical Senses, 1981, 6 (3), 165-73 (10 ref.)
DT Journal
LA English
SL English
CT ACETOSULFAM K; **ASPARTAME**; FLAVOUR; GLYCINE; PERCEPTIONS; PREFERENCES; SWEETENERS; SWEETNESS; THAUMATIN; THUMATIN; **TRYPTOPHAN**; XYLITOL
DED 18 Jun 1982